ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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Well Abandonment and Decommissioning

When a well is no longer used and needs to be decommissioned, New Hampshire law requires that it be sealed in an appropriate manner to prevent the entry of contaminants into the groundwater. The responsibility for sealing (or decommissioning0 an abandoned well lies with the well owner. The Department of Environmental Services requires that the decommissioning of water wells is performed by a licensed New Hampshire Water Well Contractor. Licensed water well contractors have the necessary equipment and experience to complete the job safely and properly.

Deciding whether or not to decommission a well

Wells are expensive commodities and are generally an asset to the property even if they are not currently in use as long as they are properly maintained. Proper maintenance may be as simple as making sure that the well head remains above the land surface where it is protected from flooding. The well must also be fitted with a sealed well cover, or concrete cover depending on the type of well, so that contaminants cannot enter the well accidentally.

If it is decided that a well has no useful purpose, has no potential future use or has no real value and may constitute a liability, then the well should be considered abandoned and must be properly decommissioned.

The decision to abandon a well is generally the home owner's, however, the New Hampshire Water Well Board may make the determination in response to reasonable supporting evidence.

Risks posed by improper well abandonment

There are very good reasons for well owners to make sure abandoned wells on their property are properly decommissioned.

- Improperly abandoned wells threaten drinking water supplies by providing open conduits into aquifers.
- Any contaminants entering an abandoned well from the surface can travel easily into different water-bearing formations (whether in coarse sand and gravel aquifers or in bedrock fracture zones) and can cross-contaminate a number of water-bearing formations within one well.

- If a drinking water well is being replaced because of water quality problems in the original well, the abandoned well is a direct threat to the new water supply if it is not properly sealed.

- Improperly abandoned wells can create a liability problem at the time of property resale or if the well causes contamination in neighboring wells.

- Shallow dug wells create a physical hazard simply because of their large diameter and the potential for animals or people to fall into them. Typically, the older fieldstone-lined wells are the most dangerous because many were finished flush to the ground surface and were covered with wooden covers, which are now decayed or non-existent.

How to decommission an abandoned well

The proper well sealing method depends on the type of well being decommissioned. The three basic well types used to supply drinking water are drilled bedrock wells, drilled or driven gravel wells and shallow dug wells.

Groundwater monitoring wells are another type specifically designed and used for aquifer assessment purposes including groundwater flow and water quality observations.

Well Decommissioning Procedures — Prior to decommissioning, all wells should be investigated to determine their condition, the details of construction and whether or not any obstructions exist that will interfere with the filling and sealing process. Any obstructions should be removed by cleaning out the hole if possible.

If the well was constructed after January 1, 1984, a report describing its relevant characteristics should be on file at the office of the Water Well Board. Copies may be obtained by calling (603) 271-1973.

- Abandoned drilled wells penetrating unconsolidated materials or fractured bedrock should be sealed by grouting the entire length of the well.

- Drilled wells that have been contaminated due to a construction deficiency or continue to cause an environmental hazard should be sealed by the pressure grout method. This is done with a conductor pipe, called a tremie pipe, starting at the bottom of the well and slowly raising the conductor pipe toward the top of the well at a rate no faster than the grout material fills and displaces water from the well and until the well is completely filled. The grout mixture used should be a Portland cement mixed with 2 percent to 10 percent high solids bentonite clay according to the correct water-to-cement ratio. Commercially available premixed bentonite grout designed for sealing wells may also be used.

- Abandoned shallow dug wells should be filled and sealed by placing clean fill material free of organic matter into the well. Often, locally available fill materials are adequate to complete the job. The upper two feet should be filled with impervious material such as clay or hardpan and slightly mounded to prohibit surface water runoff from entering the filled excavation.

- Monitoring wells shall be decommissioned based on site specific hydrogeologic and contaminant conditions and site use. Some monitoring wells can be decommissioned by simply filling the well screen and casing with grout, cutting the well casing off below

grade and completing surface application such as pavement or loam and seed. In some instances it may be appropriate to over drill and/or tremie grout a well such as in the case of wells that bridge confined units or bedrock wells, respectively. Please contact DES Waste Management Division staff at (603) 271-3644, with proposed decommissioning procedures to obtain approval.

Materials to safely seal a well

There are a variety of acceptable grout and fill materials used for sealing wells.

Portland cement, otherwise known as neat cement, mixed with five to six gallons of clean water per 94-pound bag.

Cement-Bentonite grout is a mixture of Portland cement with 2 percent to 10 percent bentonite clay mixed according to the proper water-to-cement ratio depending on the percent by weight of bentonite added. This sealant is the recommended material to use when decommissioning a contaminated well because, unlike neat cement that shrinks and can crack upon curing, cement-bentonite grout swells and remains plastic when cured creating a superior seal.

Bentonite chips can be used for filling and sealing wells or portions of wells by applying directly into the well through the top at a rate no greater than three minutes per bag. When hydrated, bentonite chips will swell up to 12 to 13 times their dry volume and effectively seal the well. If the chips are applied at a rate greater than three minutes per bag, bridging can occur within the well and the well will not be filled.

For Additional Information

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or dwgbinfo@des.state.nh.us or visit our website at www.des.nh.gov/dwgb. All of the bureau's fact sheets are on-line at www.des.nh.gov/dwg.htm.

Note: This fact sheet is accurate as of January 2007. Statutory or regulatory changes, or the availability of additional information after this date may render this information inaccurate or incomplete.